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Adolescent Girls Empowerment Programme: Research and evaluation mid-term technical report—Executive Summary

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ADOLESCENT GIRLS EMPOWERMENT PROGRAMME RESEARCH AND EVALUATION MID-TERM TECHNICAL REPORT

EXECUTIVE SUMMARY

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The Population Council confronts critical health and development issues—from stopping the spread of HIV to improving reproductive health and ensuring that young people lead full and productive lives. Through biomedical, social science, and public health research in 50 countries, we work with our partners to deliver solutions that lead to more effective policies, programmes, and technologies that improve lives around the world. Established in 1952 and headquartered in New York, the Council is a nongovernmental, nonprofit organization governed by an international board of trustees.

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For more information about the design of AGEP and the evaluation, please refer to the following:

Hewett, Paul C., Karen Austrian, Erica Soler-Hampejsek, Jere R. Behrman, Christine A. Kelly, Dela Kusi-Appouh, Fiammetta Bozzani, Barbara S. Mensch, and Minyoi Maimbolwa. 2014. *Adolescent Girls Empowerment Programme: Research and Evaluation Baseline Technical Report*. Lusaka, Zambia. Population Council.

Executive Summary

The Adolescent Girls Empowerment Programme (AGEP) was a social, health, and economic asset-building programme targeting vulnerable adolescent girls aged 10–19. AGEP was implemented at 10 sites in four of the 10 provinces of Zambia, including Lusaka, Central, Copperbelt, and North-Western. The core of AGEP was weekly “Safe Space” girls’ group meetings that were conducted over the course of two years. The girls’ groups were comprised of 20 to 30 girls who met with a trained mentor—a young woman from their community; the groups were also segmented by age and marital status. The girls were provided short training sessions on a range of health, life-skills, and financial education topics, as well as a chance to discuss important experiences of the past week. The primary goal of the Safe Space groups was to reduce social isolation and build assets that would facilitate positive change in the intermediate and longer-term for adolescent girls as they transition to adulthood.

Two additional components were added on top of the Safe Spaces meetings in the AGEP programme. The first component of AGEP was that selected girls were provided a health voucher that was redeemable for a package of health services at certain public and private health providers in their communities. The health services covered by the voucher included basic wellness exams and age-appropriate sexual and reproductive health services. The second component was a Girls Dream savings account at the National Savings and Credit Bank (NatSave). Offered to select girls within AGEP, the savings account was tailored to adolescents and the programme facilitated the process of opening bank accounts.

Programme implementation results

The Population Council, in partnership with the Young Women’s Christian Association of Zambia (YWCA-Zambia), successfully implemented the AGEP programme from late 2013 to early 2016. Although all 10 AGEP sites completed a full two years of the programme, the sites were staggered in their start and end dates as the programme rolled out sequentially by site. Over 240 mentors in AGEP guided 11,390 adolescent girls aged 10–19 at baseline into the programme and through a planned two years of programming, accumulating to approximately 40,884 meetings and 115,200 hours of mentor effort. While the AGEP Safe Spaces were very successful overall in reaching and providing programming to vulnerable adolescent girls, participation rates in the Safe Space groups were not as high as desired, with only approximately one out of every three girls invited to the programme attending more than half the AGEP group sessions; younger rural adolescents were most likely to attend, while older urban adolescents were less likely to; although the difference is only three percentage points. To address participation, AGEP adapted and responded by adding prizes for attendance, fun days, and increased community sensitization, which was thought to increase excitement for the programme. Initial programme uptake was affected by the recruitment process, as the impact evaluation required household-based recruitment of select girls rather than community-

based outreach, with the latter leading to more interested girls self-selecting to participate in the programme, and hence, higher participation rates. Further, due to potential contamination of control sites, which were often located geographically nearby, large community-based events to raise awareness, interest, and excitement for AGEP were not possible, reducing the potential for considerable community support. Ongoing programme participation was affected particularly by competing interests and activities for the girls, girls migrating out of programme sites, and loss of enthusiasm for the programme.

An evaluation of mentor quality was conducted that defined different dimensions of mentor quality, as well as assessed the impact of mentor quality on programme impacts. Girls with mentors who had positive attitudes towards contraception were less likely to have ever been pregnant; girls with mentors who scored high on “safe-space creation” were less likely to have been married, had sex, had an unwanted pregnancy, or given birth and girls with mentors who scored high on the self-efficacy score were less likely to be HIV positive and have had unwanted sex. Finally, girls who had a mentor who scored high on a “relationship with girls and community” score were also less likely to have had unwanted sex.

In collaboration with the Zambian Ministry of Health, provincial and district health offices, AGEP successfully established and operationalized the AGEP health voucher platform providing adolescent-friendly training to health service providers and facilitating access to general and sexual reproductive health services for adolescent girls in the programme. The AGEP health voucher was rolled out in the AGEP sites approximately one year after the initiation of the programme and will continue through a second year, even after the end of the AGEP Safe Space groups. Hence, the full impact of the voucher cannot be assessed in the mid-term report, as it precedes the end of the health voucher component. While the health voucher was received by 5,789 adolescent girls, this represented approximately three-quarters of those who were eligible to receive the voucher because it was distributed only to girls actively participating in AGEP by the date of rollout. For those girls who did receive the voucher, qualitative data suggest that it was empowering for girls who used it, providing needed confidence in accessing services, paying for medicine, and receiving respect from health service providers. While use of the vouchers was limited to one out of every five girls who received them, approximately one-third of girls who used the voucher did so to receive sexual and reproductive health care services. The modest use of the voucher was attributed to low demand for services, likely due to the relative healthiness of adolescent girls, social norms regarding premarital sex, and the perception that health facilities entail long lines and wait times for services.

The Girls Dream savings account at National Savings and Credit Bank was made available to one-third of AGEP girls who had joined Safe Space groups approximately eight to 10 weeks after group initiation; girls who received the account were randomised to receive it as a requirement of the impact evaluation. Approximately half of all girls who were eligible opened a bank account, although girls who were more highly engaged in AGEP were significantly more likely to do so, with approximately three-quarters of such girls opening an account. Reflecting AGEP programme participation in general, younger

rural adolescents were more likely to open an account. Given that the programme facilitated the process and travel requirements, the barrier of distance for rural girls was eliminated, at least for the opening of the account, as rural adolescents had fewer interactions with the account after it had been established. Despite the fact that overall account usage remained low throughout programme implementation, as revealed in the evaluation results, those girls who opened an account were more likely to have saved in the previous year, partially a function of higher informal savings at home. It is hypothesized that access to the bank account reinforces the information and perceived value of the financial education provided within the AGEPSafe Space groups.

Impact evaluation methods

In addition to programme implementation, a rigorous impact evaluation was embedded whose objective was to assess the impact of AGEPS on adolescent girls' outcomes. A randomised cluster design with four study arms was designed and implemented to assess impact. Communities where AGEPS was being implemented were randomly assigned to one of three arms of the intervention or to a control arm. The randomised arms of the evaluation included: 1) safe spaces only, 2) safe spaces with a health voucher, 3) safe spaces, the health voucher, and the savings accounts, or 4) a control arm. Analyses were to be conducted immediately after the AGEPS programme ended (i.e., after two years) and will be conducted an additional two years later (i.e., after four years). The primary objective of the analysis after two years was to assess the impact of AGEPS on the components of girls' empowerment that were believed to be directly influenced by the programme in the shorter term, i.e., the mediating measures of girls' social, economic, and health assets. The primary objective of the final analysis that will be conducted after four years is to assess the impact on adolescent girls' longer-term demographic, reproductive, and health outcomes. The results presented in this mid-term report focus on the first of these analyses, specifically the impact of AGEPS on girls' empowerment, although the report also presents preliminary results of the impact on longer-term outcomes after two years.

The statistical analyses of programme impact presented in this report are an "intent-to-treat" (ITT) and a "treatment-on-treated" (ToT) analysis. The ITT analysis estimates the average effect of the programme on the adolescents in clusters randomised to AGEPS relative to girls in clusters randomised to the control, based on their original randomisation and irrespective of actual participation in the intervention. Randomisation assures that the estimate of impact is unbiased and therefore provides the highest degree of confidence in attributing any differences in observed outcomes specifically to AGEPS. As the ITT analysis does not account for the fact that many girls did not choose to participate in AGEPS or had different levels of participation, a secondary ToT analysis was conducted using indicators of impact that measured actual programme participation. The ToT analysis conducted here controls for the potential selectivity of girls choosing to participate in AGEPS through an instrumental variables estimation approach. The ToT is expected to reveal a stronger programme impact than the ITT if substantial numbers of

girls choose not to participate, but the programme has an impact for those who do participate.

In parallel to assessing the impact of AGEp, an evaluation of the cost-effectiveness of the programme was conducted to facilitate comparisons between AGEp and other programmes whose objectives are to improve similar outcomes for adolescent girls. It also allows for an assessment of the incremental cost-effectiveness of each of the components or arms of AGEp. To execute the economic evaluation, direct programme costs were collected from AGEp budgets and financial reports and included both start-up and programme delivery costs for the Population Council and its partners. A decision analytic model was constructed to generate estimates of the incremental costs per negative health outcome averted and positive progress achieved on non-health indicators from participating in AGEp. The focus of the economic evaluation analysis in this mid-term report will centre on the question of cost-effectiveness of all arms of AGEp compared to not implementing any programme. It should be noted, however, that the value of the economic evaluation is dependent upon a significant showing of benefits of the programme for participants.

Impact evaluation results

A total of 5,235 respondents completed the AGEp baseline (Round 1) survey. Approximately, 90% of the adolescents interviewed at baseline were re-interviewed a year later in Round 2, and 89% of Round 1 participants were re-interviewed in Round 3. The baseline characteristics of girls, as well as the loss-to-follow-up over time were well balanced across study intervention arms and controls, meaning that the randomisation by study arm was effective at evenly distributing the characteristics of the sample and that the programme did not differentially affect the study's ability to track study participants. The impact results presented in the mid-report focus on the change that occurred between Round 1 and Round 2 (after the first year of the programme), between Round 2 and Round 3 (after the second year of the programme), and between Round 1 and Round 3 (cumulative effect of the programme). The results are also provided by the various age and residential groupings, including younger urban girls, young rural girls, older urban girls, and older rural girls; as delineated by their ages (10–14, 15–19) and residencies (urban, rural) at baseline. Additional results are presented for each of the three intervention arms separately, as compared to the control cases and each other. The mid-term results are first discussed in reference to their impact on girls' empowerment and then turn towards a preliminary assessment of impact on what are considered longer-term outcomes for girls.

Empowerment is defined within AGEp as the condition of possessing the assets and capacities that allow adolescent girls to maximize the opportunities they might encounter during the early and later adolescent years. As reflected by AGEp's theory of change, the programme was designed to build upon and expand these assets through the Safe Spaces meetings and provision of a health voucher and a bank account. Empowerment was also seen as a key ingredient to improving the longer-term adolescent outcomes. The indicators used to measure empowerment across the social, economic, and health domains are presented in the report in Table 12 below. While not exhaustive of every

possible dimensions of the multifaceted nature of girls' empowerment, the AGEP research instrument was designed to capture what were thought to be the key mediating factors underlying the theory of change.

In measuring girls' empowerment in the three rounds of data that were analysed for the mid-term report, three themes emerge. The first theme was that adolescent girls on average were not absent of assets prior to the initiation of the AGEP and that, in fact, on some asset indicators could be said to have possessed higher levels of empowerment than their vulnerability would have suggested. For instance, girls on average had relatively high levels of self-efficacy at baseline, agreeing to statements that indicated that they felt they were able to manage problems faced, overcome difficulties, find solutions, and accomplish goals. Also, girls expressed confidence in their ability to change outcomes based on any plans they make and that they were proficient in making good decisions regarding the use of money. Girls also were shown to possess basic financial literacy skills at baseline. Of course, it should be noted that averages hide potentially large numbers and percentages of girls who do not possess such assets.

A second theme of assessing the measures of empowerment across the survey rounds in the evaluation is that a notable degree of change was observed in the assets over time, but that the change was not solely due to the impact of AGEP. There may be a range of factors driving change in girls' empowerment. For instance, as girls age they may acquire new capabilities, acquire new information, or hone the skills they already possess. Adolescents may also be exposed in their communities to other programmes, interventions, and/or information similar in nature to that provided through AGEP. Further, as they become older, girls may be provided or take on new responsibilities and challenges that naturally enhance their sense of efficacy, skills, autonomy, and control. Across many empowerment indicators, the AGEP programme enhanced the development of girls' social, economic, and health assets, although in many cases, despite being positive, they did not reach the level of statistical significance.

A third observation was that a set indicators remained relatively impervious to any change over time, specifically those regarding the perceptions of gender equality and norms regarding gender-based violence against women and girls. For instance, the notion that boys and girls, men and women are similar in their innate characteristics, such as intelligence, or in norms concerning who should attend school or make decisions in the household remained unchanged, whether among AGEP or among control girls. This was the case for AGEP participants even though the health and life-skills curriculum specifically addressed gender roles, gender-based violence, and human and children's rights. The lack of change in perceptions of gender, gender roles, and violence against women points to the deeply ingrained nature of these normative attitudes and beliefs and the need to potentially complement Safe Space group trainings with additional community-based interventions that can serve to reinforce girls' own assessments. It is possible, for example, that while many internalized assets are more malleable to a direct girl-based asset-building approach, perceptions of what is normative or external to the girls themselves in the enabling environment require appropriate messaging to come from actors in that environment, e.g., boys, men, families, and communities.

The primary impact results for the empowerment indicators were summarized in the mid-term report in Tables 18 (ITT) and 19 (ToT), while the detailed results, including the

impact coefficients and p-values are provided in Tables [C-2](#) and [C-4](#); in most cases, the results of the ITT and ToT reinforce one another providing confidence in the robustness of the statistical assessment and conclusions drawn overall. Of the range of indicators that were used to measure girls' empowerment in the evaluation, a total of six indicators (two in each of the three asset domains) in the ITT and ToT revealed statistically significant differences at $p < .05$ among girls participating in AGEp (all arms) and girls in the control clusters. All of these six indicators show, as hypothesized, greater positive improvement, whether among girls who were randomised to receive AGEp or among those who had actually participated intensely in the programme. For instance, there was an increase in girls' access to a place in the community where they felt safe to meet their friends apart from school and home. Also, girls in AGEp had made significantly greater improvements in financial literacy over time. One additional indicator (self-efficacy) was statistically significant different between Round 1 and 2, but control girls had caught up by Round 3. Overall, the impact results on girls' empowerment due to the programme were modest as measured immediately after the end of two-year AGEp program period. It is possible that AGEp has, however, set girls on a different trajectory of further acquisition of assets and hence the cumulative impact of AGEp on empowerment may be revealed in later rounds of observation.

For the longer-term outcomes, in both the ITT and ToT analyses the impact of AGEp is already apparent in two of the indicators. These results are presented in summary form in Tables 20 and 21 and in detail in Tables [C-3](#) and [C-4](#). There was no significant difference between the AGEp and control girls on educational attainment, timing of marriage, pregnancy and birth, experience of violence, or HIV/HSV-2 prevalence. AGEp girls were, however, significantly less likely to engage in transactional sex and more likely to use a condom at first sex than girls who were not exposed to the programme. Between Rounds 1 and 3, the percentage of girls in AGEp who had engaged in transactional sex was 13% less than girls in the control group; notably, nearly half the girls in the sample who had initiated sexual activity had reported transactional sex. AGEp girls between Round 1 and Round 3 were also more likely to use a condom at first sex, by approximately five percentage points. Although lower at 4% points and not statistically significant overall between Round 1 and 3, condom use at last sex with a nonmarital partner was also higher among AGEp girls compared to control girls. Additional years of observation will reveal if these impacts are able to translate into delayed pregnancy and STI acquisition. While the majority of longer-term indicators were not statistically significant after two years, it should be noted that the study was statistically powered based on the full four years of observation that will be made on these indicators, as such it would be inappropriate to conclude that AGEp had no effect on these indicators because of their lack of statistical significance in these analyses.

Analysis of the impact of AGEp on girls' empowerment was also conducted for each intervention arm separately against the control arm. These results are presented in summary form in Table 22 and in detail in Table [C-5](#). The study was powered to assess differences between the intervention and control arms, as well as between each intervention arm separately. This latter fact provides an opportunity for the cost-

effectiveness evaluation to offer an assessment regarding the cost-effectiveness of the AGEP components if scaling or expanding the programme to other settings is an objective. The study results by arm parallel the overall impact of the programme, in that most of the statistically significant findings are consistently significant across intervention arms relative to the control arm, suggesting that the impact is attributable to the safe space component. There are two indicators (% having saved in the past year, % having saved more than 20 kwacha) in which statistical significance is observed only in the arm that includes the additional bank account component. Hence, one may conclude that the addition of having a bank account, whether or not it is used very much, increases the propensity to save; this result is back up by the observation from the data that girls with the bank account are accumulating their savings informally as much as they are formally through the use of the account.

The economic evaluation looked at the implementation cost per beneficiary (Table 24), which totalled \$394 per girl for the Safe Space groups, an additional \$293 per girl for the health voucher, and an additional \$551 per girl for the savings account (adjusted for inflation to 2016 \$US). A large component of the Safe Space group costs were staff costs of implementing and monitoring the groups and the per diems that were paid to mentors over the two years of the programme. The additional costs associated with the bank account were largely related to transporting all of the girls to the NatSave branches to receive an introduction and to open the bank accounts. It is expected that a scaled-up version of the programme would be cheaper as approximately 20% of the costs were start-up costs, as well as added expenses incurred to implement the programme in the context of a randomised controlled trial. The average cost-effectiveness ratios were also presented in Table 29 and reveal that given the limited impact on the longer-term outcomes for adolescents that it is extremely expensive for unit changes in the outcomes within the first two years of the programme. In many ways, these results are an artifact of the lack of impact in the short-term for outcomes that are expected to change over a longer period of time.

Considerations

The results presented in the mid-term report have implications for recommendations on future programming for adolescent girls in Zambia and elsewhere and should be coupled with burgeoning evidence from AGEP and the literature to adapt programming for vulnerable adolescent girls in order to improve impact. In many ways, the longer-term impact of AGEP will not be known until the final round of data collection in 2017. While the impact of AGEP on empowerment was not as strong as expected immediately after the end of the programme, it is possible that the measures of assets did not comprehensively capture all aspects of girls' empowerment that were changed by AGEP and, in turn, influence longer-term adolescent outcomes. Further, it is also possible that AGEP has set girls on a different trajectory of further acquisition of assets and hence the cumulative impact of AGEP on empowerment and subsequent outcomes may be revealed in later years of observation. Finally, it is also possible that the AGEP programme will have a direct effect on longer-term adolescent outcomes, independent of its indirect impact expected to occur through empowerment. For these reasons and

others, the AGEP study provides a wealth of data that will be explored for further understanding of the adolescent transitions in Zambia, as well as application to adolescent programming.

It should be noted that the AGEP programme implementation was, in many ways, constrained by the need to integrate a highly rigorous evaluation. In particular, due to fears of contaminating the control areas and undermining the evaluation, community engagement and involvement was necessarily limited. On the positive side, this allowed for a rigorous assessment of the Safe Space girls' group model by isolating its activities. The mid-term results, however, are suggestive that an adolescent girls' asset-building programme may not be sufficient to lead to immediate and substantial change on its own. This may particularly be the case given the entrenched nature of traditional social gender norms, attitudes towards adolescent sexuality, and use of contraceptives, to name a few. A more comprehensive ecological theory would dictate that complementary work is needed in the enabling environment, particularly at the family and community level. A promising approach that has been found effective elsewhere would be to engage the boys, men, adults, and other key stakeholders in girls' lives, addressing norms at household and community levels in order to benefit girls. This may be an important way to help girls leverage the assets they are building in the safe spaces.

AGEP was also an ambitious project directed towards changing girls' lives in a significant and meaningful way across areas of education, sexual and reproductive health, marriage and fertility, and experience of violence. While the programme length of two years was sufficient to cover these areas in the Safe Spaces group curricula, it is possible that depth of the programme was foregone in place of breadth. While the underlying root causes of girls' vulnerabilities are interrelated, it is possible that a more direct focus on a particular outcome, driven by a more targeted intervention, would have led to greater impact in the shorter term. A domain-specific conceptualization of change and related theory of change for particular outcomes would be a natural first step in this process. For adolescents, it may imply a direct focus for older adolescents on livelihoods and entrepreneurship and for younger adolescents may need more focus on educational support. Also, providing direct resources through incentivised activities may be a constructive approach to increasing engagement with the programme.

Overall, the AGEP cohort data, and lessons it has generated from the Adolescent Girls Empowerment Programme are rich, nuanced, and important for informing the next generation of programmes for adolescents in Zambia and elsewhere. Even though the study is still underway, and the full longer-term effects of AGEP remain to be seen, the information presented in this report can be used to guide programmes and policymakers on programme areas of promise, gaps that need to be filled, and a range of questions about how to best serve this population that still need to be answered.

Table C-1. Intent-to-Treat (ITT) Summary Results: Difference-in-Difference (DID) Estimators - Excludes external urban controls

		ITT - DID (xtreg models; two rounds at a time)										ITT (if not measured at R1)										
		DID estimates, girl random effects, robust SE clustered at CSA (160 clusters)															Girl random effects (if two rounds), robust SE clustered at CSA (160 clusters)					
		All	Younger Rural	R2-R1 Younger Urban	Older Rural	Older Urban	All	Younger Rural	R3-R2 Younger Urban	Older Rural	Older Urban	All	Younger Rural	R3-R1 Younger Urban	Older Rural	Older Urban	All	Younger Rural	Younger Urban	Older Rural	Older Urban	
		Empowerment Indicators																				
		Social assets																				
1	Avg. score on self-efficacy scale (0-10)	✓	✓					X														
2	% confident regarding their ability to plan																					
3	% feel they make good decisions regarding money		✓					X														
4	% agree that permission to go to the health clinic is not a problem																					
5	% who jointly or solely make decisions with regard to money earned among those who earned money																					
6	Avg. number of friends							X														
7	Avg. number of friends in school							X														
8	Avg. number of friends who can be counted on if needed money							X					X									
9	Avg. number of friends who can be counted on in an emergency																					
10	% have place in community where feel safe to meet girl friends	✓	✓			✓	X		X	X	X	✓	✓									
11	% with adult female support in case of serious problem																					
12	% attending any social groups/clubs within the past month										X						X					
13	% who often/sometimes go to market ^d																					
14	% who often/sometimes go to community centre ^d																	✓	✓	✓	✓	
15	% who often/sometimes go to shops or restaurants ^d																					
16	Avg. score on gender equality scale																					
17	Avg. score on nonacceptability of intimate partner violence																					
		Economic assets																				
18	Avg. score on financial literacy scale		✓			X					✓	✓	✓									
19	% who have saved in the past year							✓				✓	✓		✓							
20	Avg. amount currently saved											✓										
20a	% who currently have at least 20 kwacha saved											✓										
20b	Avg. amount currently saved among those who saved	X			X							✓										
21	% working for cash or in-kind in the past year											✓										
22	Avg. reported work income in the past year					✓											X		✓			
22a	Avg. reported income in the past year among those who worked for cash																					
23	% who own a bicycle						X															
24	% who own a mobile phone							X				X										
		Health assets																				
25	% Understanding pregnancy risk during menstrual cycle																					
26	Avg. score on contraceptive knowledge scale (0-9)		✓									✓	✓									
26a	Avg. score on SRH knowledge scale (0-11)											✓	✓									
27	Avg. score on HIV/AIDS knowledge scale (0-11)																					
28	Avg. rating of health status in the past year (0-10)																					
29	Avg. rating of health status in the past month (0-10)																					
30	Avg. reported number of health problems in the past month (0-7)																					
		Impact Indicators																				
		Educational																				
1	Avg. number of years completed								X													
2	% completed primary school																					
3	% completed junior secondary school ^d																					
4	% currently attending school																					
		Sexual risk behaviour ^b																				
5	% ever had sex																					
5a	Avg. age at first sex among those who ever had sex and report knowing age at first sex ^d																					
6	% agree that they have had unwanted sex																					
7	% agree that they have had transactional sex												✓									
8	% used condom at last sex with non-marital partner												✓									
9	% used condom at first sex												✓									
		Marital ^b																				
10	% ever married																					
11	Avg. number of HIV risk-related topics discussed with partner (0-5) ^d																					
12	Avg. marital control score (0-6) ^d																					
		Pregnancy & births ^b																				
13	% who have ever been pregnant																					
14	% who have ever had an unwanted pregnancy																					
15	% currently pregnant or who have given birth																					
16	% ever used modern contraception																					
		Sexually transmitted infections ^b																				
17	% HIV positive																					
18	% HSV-2 positive																					
		Experience of violence ^c																				
19	% have experienced physical violence in past 12 months																					
20	% have experienced intimate partner violence in past 12 months																					

Notes

It should be noted that while blank cells do represent non-significant findings, it does not imply that there was a no effect.

Younger girls were 10-14 at baseline; older girls were 15-19 at baseline

All models include site fixed effects and other covariates.

Covariates: Age, school attendance, grade attainment, literate (any language), numeracy score at baseline, cognitive score at baseline, mother alive, father alive, biological daughter of HH head, HH items, HH assets/savings, tribes (Bemba, Nyanja, Kaonde, other), mother completed primary, father completed primary, standardized vulnerability quintiles.

Models for grade attainment, completed grade 7, and completed grade 9 do not include school attendance, grade attainment, literacy, numeracy and cognitive skills

Models for school attendance do not include school attendance

^a ITT coefficients are estimated from linear regression models clustered at the CSA level given that we do not have a baseline measure for this indicator to estimate the difference-in-difference coefficient (see ITT (if not measured at R1) results). The difference-in-difference coefficient is estimated in the R2 & R3 results.

^b Indicators in this domain measured among those aged 15 and older.

^c Models will be estimated at endline using survival analysis.

^d Indicators in this domain measured among those aged 13 and older.

[illegible]

Notes
 Covariates: Age, grade attainment, grade attainment, literacy (any language), numeracy score at baseline, cognitive score at baseline, mother alive, father alive, biological daughter of HH head, HH members, HH assets/savings, tribes (Bemba, Nyanja, Kaonde, other), mother completed primary, father completed primary, standardized vulnerability attitudes.
 Models for grade attainment, completed grade 7, and completed grade 8 do not include school attendance, grade attainment, literacy, numeracy and cognitive skills.
 Models for school attendance do not include school attendance.
 *TT coefficients are estimated from linear regression models clustered at the CSA level given that we do not have a baseline measure for this indicator to estimate the difference-in-difference coefficient (see ITT or not measured at R1) results. The difference-in-difference coefficient is estimated in the R2 and R3 results.

^b While this set of asset indicators reflects important capabilities, they are not expected to be directly affected by the AGEP intervention as there are no programme components that build capacity in these areas. Hence, these indicators are not included in the AGEP impact assessment as outcomes. However, a measure of literacy in any language at each round and baseline numeracy and cognitive scores are used as covariates in the adjusted estimation results.

^cIndicators in this domain measured among those aged 15 and older.^aIndicators in this domain measured am^e Models will be estimated at endline using survival analysis.

* Sample was never married at baseline.

^fIndicators in this domain measured among those aged 13 and older.

Key	Findings	TOT - DID														
		DID estimates using instrumental variable analysis: grr random effects and robust SE clustered at CSA (160 clusters)														
		TOT R2-R1					TOT R3-R2					TOT R3-R1				
		TOT = Attended 26+ meetings between R1 & R2					TOT = Attended 26+ meetings between R2 & R3					TOT = Attended 52+ meetings between R1 & R3				
		All	Younger Rural	Younger Urban	Older Rural	Older Urban	All	Younger Rural	Younger Urban	Older Rural	Older Urban	All	Younger Rural	Younger Urban	Older Rural	Older Urban
✓	At $p < .05$ AGE ₆₅ had a significant positive effect relative to controls															
	At $p < .10$ AGE ₆₅ had a marginally significant positive effect relative to controls															
X	At $p < .05$ AGE ₆₅ had a significant negative effect relative to controls															
	At $p < .10$ AGE ₆₅ had a marginally significant negative effect relative to controls															
	Indicator not collected for this age group															
	Not measured at Round 1 or Round 2															

Empowerment indicators									
Social assets									
1	Avg. score on self-efficacy scale (0-10)	✓							
2	% confident regarding their ability to plan	✓	✓						
3	% feel they make good decisions regarding money								
4	% agree that permission to go to the health clinic is not a problem								
5	% who jointly or solely make decisions with regard to money earned among those who earned money								
6	Avg. number of friends								
7	Avg. number of friends in school								
8	Avg. number of friends who can be counted on if needed money								
9	Avg. number of friends who can be counted on in an emergency								
10	% have place in community where feel safe to meet girl friends	✓	✓						
11	% with adult female support in case of serious problem								
12	% attending any social groups/clubs within the past month								
13	% who often/sometimes go to market ^a								
14	% who often/sometimes go to community centre ^a	✓	✓	✓	✓	✓			
15	% who often/sometimes go to shops or restaurants ^a								
16	Avg. score on gender equality scale								
17	Avg. score on nonacceptability of intimate partner violence								
Economic assets									
18	Avg. score on financial literacy scale	✓	✓						
19	% who have saved in the past year								
20	Avg. amount currently saved								
20a	% who currently have at least 20 kwacha saved								
20b	Avg. amount currently saved among those who saved								
21	% working for cash or in-kind in the past year								
22	Avg. reported work income in the past year								
22a	Avg. reported income in the past year among those who worked for cash								
23	% who own a bicycle								
24	% who own a mobile phone								
Health assets									
25	% Understanding pregnancy risk during menstrual cycle								
26	Avg. score on contraceptive knowledge scale (0-9)	✓	✓						
26a	Avg. score on SRH knowledge scale (0-11)								
27	Avg. score on HIV/AIDS knowledge scale (0-11)								
28	Avg. rating of health status in the past year (0-10)								
29	Avg. rating of health status in the past month (0-10)								
30	Avg. reported number of health problems in the past month (0-7)								

Impact indicators									
Educational									
1	Avg. number of years completed								
2	% completed primary school								
3	% completed junior secondary school ^a								
4	% currently attending school								
Sexual risk behaviour ^b									
5	% ever had sex								
5a	Avg. age at first sex among those who ever had sex and report knowing age at first sex ^c								
6	% agree that they have had unwanted sex								
7	% agree that they have had transactional sex								
8	% used condom at last sex with non-marital partner								
9	% used condom at first sex								
Marital ^b									
10	% ever married								
11	Avg. number of HIV risk-related topics discussed with partner (0-5) ^a								
12	Avg. marital control score (0-6) ^a								
Pregnancy & births ^b									
13	% who have ever been pregnant								
14	% who have ever had an unwanted pregnancy								
15	% currently pregnant or who have given birth								
16	% ever used modern contraception								
Sexually transmitted infections ^b									
17	% HIV positive								
18	% HSV-2 positive								
Experience of violence ^d									
19	% have experienced physical violence in past 12 months								
20	% have experienced intimate partner violence in past 12 months								

Younger girls were 10-14 at baseline; older girls were 15-19 at baseline
Indicator was denoted as significant at the $p < .05$ level if both the grid random effects and the robust SE clustered at CSA models were significant at $p < .05$. It was denoted as significant at the $p < .10$ level if both models were significant at $p < .10$ or if one was significant at $p < .05$ and the other at $p < .10$.
It should be noted that while blank cells do represent non-significant findings, it does not imply that there was a no effect.

^a TOT coefficients are estimated from linear regression models clustered at the CSA level (Model B) at R2 (in R1 & R2 results) and R3 (in R1 & R3 results) given that we do not have a baseline measure for this indicator to estimate the difference-in-difference coefficient. The difference-in-difference coefficient is estimated in the R2 & R3 results.

Table C-4. Treatment-on-Treated (ToT) Detailed Results - Difference-in-Difference (DID) Estimators - Excludes external urban controls

		TOT R2-R1- Site fixed effects and other covariates TOT = Attended 26+ meetings between R1 & R2						TOT R3-R2- Site fixed effects and other covariates TOT = Attended 26+ meetings between R2 & R3						TOT R3-R1- Site fixed effects and other covariates TOT = Attended 52+ meetings between R1 & R3					
KEY	At p < .05 AGEp had a significant positive effect relative to controls	Naive xtreg		Instruments: ITT and ITT*R2 xtivreg		ivreg2		Naive xtreg		Instruments: ITT and ITT*R3 xtivreg		ivreg2		Naive xtreg		Instruments: ITT and ITT*R3 xtivreg		ivreg2	
KEY	At p < .10 AGEp had a marginally significant positive effect relative to controls	Girl random effects, robust SE clustered at CSA (160 clusters)						Girl random effects, robust SE clustered at CSA (160 clusters)						Girl random effects, robust SE clustered at CSA (160 clusters)					
KEY	At p < .10 AGEp had a marginally significant negative effect relative to controls	DID R2-R1 Coef		DID R2-R1 p-val		Robust SE clustered at CSA (160 clusters)		DID R3-R2 Coef		DID R3-R2 p-val		Robust SE clustered at CSA (160 clusters)		DID R3-R1 Coef		DID R3-R1 p-val		Robust SE clustered at CSA (160 clusters)	
	Not measured at Round 1 or Round 2	4,185				3,918		4,124				4,123							
	Total interviewed in both rounds	0.245				0.233						0.223							
	% TOT																		
Empowerment Indicators																			
Social assets																			
1	Avg. score on self-efficacy scale (0-10)	0.127	0.415	0.984	0.013	0.984	0.014	0.038	0.750	-0.391	0.265	-0.381	0.389	0.213	0.141	0.386	0.361	0.384	0.375
2	% confident regarding their ability to plan	-0.010	0.709	-0.030	0.688	-0.030	0.701	-0.017	0.500	0.037	0.651	0.037	0.620	-0.028	0.286	0.023	0.787	0.023	0.789
3	% feel they make good decisions regarding money	0.070	0.000	0.148	0.016	0.148	0.037	0.008	0.666	-0.115	0.047	-0.115	0.092	0.050	0.021	0.029	0.655	0.029	0.730
4	% agree that permission to go to the health clinic is not a problem	-0.007	0.492	-0.013	0.684	-0.013	0.662	-0.016	0.094	-0.026	0.406	-0.025	0.413	-0.016	0.159	-0.037	0.282	-0.037	0.354
5	% who jointly or solely make decisions with regard to money earned among those who earned money	0.036	0.276	-0.106	0.295	-0.109	0.294	-0.035	0.207	0.042	0.618	0.042	0.595	0.044	0.182	-0.014	0.886	-0.019	0.832
6	Avg. number of friends	-0.218	0.122	0.220	0.651	0.221	0.651	0.053	0.720	-0.610	0.155	-0.583	0.247	-0.168	0.305	-0.638	0.237	-0.632	0.380
7	Avg. number of friends in school	-0.239	0.075	0.142	0.739	0.142	0.719	0.134	0.349	-0.491	0.221	-0.464	0.323	-0.161	0.254	-0.525	0.261	-0.516	0.354
8	Avg. number of friends who can be counted on if needed money	0.017	0.854	0.012	0.964	0.012	0.961	-0.050	0.574	-0.183	0.549	-0.182	0.549	-0.086	0.386	-0.282	0.402	-0.281	0.420
9	Avg. number of friends who can be counted on in an emergency	-0.030	0.778	0.164	0.583	0.160	0.633	-0.059	0.585	-0.405	0.196	-0.405	0.319	-0.066	0.526	-0.431	0.193	-0.427	0.304
10	% have place in community where feel safe to meet girl friends	0.128	0.000	0.395	0.000	0.396	0.000	0.003	0.906	-0.225	0.000	-0.225	0.026	0.135	0.000	0.171	0.042	0.171	0.088
11	% with adult female support in case of serious problem	0.038	0.117	-0.044	0.536	-0.044	0.453	0.043	0.056	0.065	0.381	0.065	0.424	0.066	0.003	-0.018	0.816	-0.018	0.832
12	% attending any social groups/clubs within the past month	0.036	0.123	-0.029	0.650	-0.027	0.748	0.000	0.988	-0.041	0.568	-0.041	0.596	0.035	0.185	-0.093	0.197	-0.093	0.298
13	% who often/sometimes go to market ^a	0.001	0.951			-0.074	0.189	0.023	0.194	0.019	0.700	0.021	0.713	-0.017	0.243			-0.071	0.174
14	% who often/sometimes go to community centre ^a	0.083	0.000			0.298	0.000	0.003	0.865	-0.008	0.872	-0.008	0.878	0.092	0.000			0.305	0.000
15	% who often/sometimes go to shops or restaurants ^a	0.008	0.635			-0.039	0.520	0.023	0.268	0.035	0.596	0.035	0.678	0.031	0.066			0.017	0.759
16	Avg. score on gender equality scale	0.187	0.009	0.161	0.444	0.158	0.570	0.020	0.762	-0.086	0.693	-0.085	0.698	0.101	0.218	0.057	0.808	0.058	0.836
17	Avg. score on nonacceptability of intimate partner violence	0.146	0.113	0.151	0.578	0.150	0.645	-0.087	0.377	-0.582	0.033	-0.580	0.122	0.118	0.243	-0.475	0.115	-0.472	0.162
Economic assets																			
18	Avg. score on financial literacy scale	0.546	0.000	0.930	0.000	0.928	0.035	-0.146	0.076	-0.031	0.912	-0.029	0.937	0.368	0.000	0.928	0.002	0.929	0.016
19	% who have saved in the past year	0.119	0.000	0.076	0.190	0.076	0.192	0.037	0.138	0.092	0.200	0.092	0.224	0.116	0.000	0.172	0.011	0.172	0.017
20a	Avg. amount currently saved	-0.158	0.957	-17.181	0.070	-17.262	0.115	-1.467	0.800	34.977	0.057	36.045	0.016	-3.399	0.538	15.979	0.434	15.976	0.457
20b	% who currently have at least 20 keshes saved	0.069	0.001	0.047	0.296	0.047	0.262	0.046	0.023	0.039	0.509	0.039	0.498	0.072	0.000	0.085	0.130	0.085	0.142
21	Avg. amount currently saved among those who saved	-26.217	0.065	-116.415	0.010	-116.415	0.005	-11.614	0.415	56.738	0.241	79.750	0.038	-46.729	0.018	-40.803	0.638	-53.741	0.366
22	% working for cash or in-kind in the past year	0.031	0.141	0.054	0.344	0.054	0.441	0.038	0.053	-0.003	0.965	0.000	0.995	0.065	0.004	0.055	0.400	0.055	0.468
23	Avg. reported work income in the past year	-5.873	0.563	35.704	0.344	36.181	0.352	-7.424	0.505	55.337	0.270	55.782	0.244	-17.832	0.138	59.198	0.274	59.184	0.230
24a	Avg. reported income in the past year among those who worked for cash	-83.652	0.135	33.807	0.863	33.807	0.860	-71.173	0.117	230.151	0.230	218.800	0.232	-133.765	0.021	80.053	0.730	84.992	0.661
25	% who own a bicycle	0.005	0.174	0.005	0.689	0.005	0.689	-0.004	0.290	-0.014	0.306	-0.014	0.288	0.000	0.939	-0.008	0.509	-0.008	0.535
26	% who own a mobile phone	-0.018	0.196	0.012	0.782	0.013	0.742	-0.030	0.043	-0.125	0.020	-0.126	0.040	-0.032	0.069	-0.141	0.013	-0.141	0.016
Health assets																			
27	% Understanding pregnancy risk during menstrual cycle	0.013	0.335	-0.062	0.129	-0.062	0.150	0.012	0.409	0.057	0.210	0.057	0.244	0.013	0.341	0.000	0.993	0.000	0.992
28	Avg. score on contraceptive knowledge scale (0-9)	0.252	0.000	0.507	0.016	0.502	0.026	0.065	0.376	0.269	0.246	0.272	0.232	0.154	0.040	0.809	0.001	0.807	0.001
29a	Avg. score on SRH knowledge scale (0-11)	0.303	0.000	0.443	0.056	0.438	0.088	0.101	0.217	0.373	0.140	0.375	0.159	0.192	0.028	0.888	0.001	0.885	0.003
30	Avg. score on HIV/AIDS knowledge scale (0-11)	0.456	0.001	0.011	0.979	0.013	0.980	0.345	0.029	0.482	0.228	0.478	0.337	0.495	0.001	0.395	0.405	0.389	0.519
31	Avg. rating of health status in the past year (0-10)	0.179	0.096	0.565	0.084	0.566	0.143	-0.011	0.915	-0.306	0.376	-0.307	0.447	0.026	0.818	0.200	0.586	0.200	0.647
32	Avg. rating of health status in the past month (0-10)	-0.089	0.397	-0.326	0.283	-0.326	0.482	0.071	0.496	-0.163	0.611	-0.164	0.686	-0.113	0.336	-0.610	0.078	-0.610	0.258
33	Avg. reported number of health problems in the past month (0-7)	0.056	0.400	0.169	0.417	0.166	0.558	-0.116	0.137	-0.273	0.231	-0.273	0.304	-0.001	0.992	-0.115	0.610	-0.115	0.723
Impact Indicators																			
Educational																			
1	Avg. number of years completed	0.103	0.000	0.167	0.010	0.172	0.133	0.019	0.470	-0.043	0.677	-0.073	0.580	0.116	0.003	0.114	0.384	0.111	0.574
2	% completed primary school	0.020	0.024	0.030	0.170	0.033	0.191	-0.003	0.819	-0.002	0.964	-0.008	0.860	0.012	0.422	0.019	0.695	0.018	0.737
3	% completed junior secondary school ^b	-0.009	0.044	0.022	0.135	0.019	0.245	-0.026	0.023	-0.052	0.178	-0.053	0.220	-0.029	0.021	-0.029	0.490	-0.029	0.566
4	% currently attending school	0.026	0.022	0.009	0.806	0.008	0.830	0.025	0.093	-0.019	0.679	-0.017	0.717	0.070	0.000	-0.004	0.944	-0.004	0.943
Sexual risk behaviour																			
5	% ever had sex	-0.022	0.268	-0.007	0.929	0.037	0.625	-0.003	0.871	0.102	0.150	0.100	0.102	-0.011	0.655	0.102	0.304	0.138	0.152
5a	Avg. age at first sex among those who ever had sex and report knowing age at first sex ^c																		
6	% agree that they have had unwanted sex													0.030	0.587	0.106	0.622	0.112	0.587
7	% agree that they have had transactional sex													-0.063	0.310	-0.442	0.048	-0.469	0.047
8	% used condom at last sex with non-marital partner	-0.037	0.703	0.547	0.102	0.556	0.040	0.047	0.537	-0.405	0.258	-0.405	0.274	0.044	0.586	0.139	0.686	0.153	0.625
9	% used condom at first sex	0.032	0.190	0.038	0.614	0.191	0.061	-0.031	0.144	0.060	0.449	0.073	0.475	0.004	0.809	0.137	0.044	0.270	0.062
Marital ^b																			
10	% ever married	-0.065	0.000	0.050	0.355	0.050	0.381	-0.062	0.000	0.086	0.126	0.077	0.088	-0.102	0.000	0.113	0.130	0.113	0.083
11	Avg. number of HIV risk-related topics discussed with partner (0-5) ^d	-0.397	0.359			-1.532	0.487	0.087	0.192	-0.926	0.351	0.341	0.877	-0.110	0.687			0.491	0.814
12	Avg. marital control score (0-6) ^e	-0.433	0.220			-5.269	0.019	-0.097	0.032	0.698	0.400	2.375	0.300	-0.235	0.357			-3.400	0.079
Pregnancy & births																			
13	% who have ever been pregnant	-0.054	0.000	-0.081	0.195	-0.042	0.557	-0.032	0.025	0.069	0.291	0.063	0.281	-0.083	0.000	-0.013	0.882	-0.003	0.969
14	% who have ever had an unwanted pregnancy	-0.046	0.000	-0.101	0.052	-0.078	0.170	-0.029	0.023	0.001	0.982	0.013	0.793	-0.059	0.000	-0.091	0.256	-0.066	0.418
15	% currently pregnant or who have given birth	-0.054	0.000	-0.031	0.600	-0.002	0.969	-0.050	0.000	0.071	0.275	0.064	0.254	-0.081	0.000	0.041	0.637	0.043	0.604
16	% ever used modern contraception	-0.038	0.000	-0.062	0.231	-0.055	0.299	-0.045	0.013	0.071	0.308	0.073	0.243	-0.068	0.000	0.008	0.923	0.008	0.932
Sexually transmitted infections																			
17	% HIV positive													-0.002	0.815	0.002	0.958	0.007	0.827
18	% HSV-2 positive													-0.021	0.223	0.050	0.461	0.033	0.619
Experience of violence																			
19	% have experienced physical violence in past 12 months	0.006	0.838	0.018	0.834	0.018	0.871	0.011	0.654	0.053	0.468	0.050	0.534	-0.011	0.697	0.045	0.618	0.044	0.727
20	% have experienced intimate partner violence in past 12 months	-0.010	0.221	-0.032	0.224	-0.033	0.175	-0.006	0.250	0.002	0.958	0.002	0.952	-0.016	0.053	-0.020	0.553	-0.020	0.590

